

Gray wolf at Woodland Park Zoo receives pacemaker in groundbreaking and life-saving procedure

*Procedure is among the first known conducted for a wolf species

SEATTLE – Woodland Park Zoo’s 14-year-old female gray wolf, Shila, has received a pacemaker in an innovative and groundbreaking medical procedure to treat a life-threatening cardiac arrhythmia. The successful procedure took place June 12, and Shila is recovering well behind the scenes.

While pacemakers are common treatments for humans and domestic dogs, a wolf receiving a pacemaker is extraordinarily rare. Woodland Park Zoo’s team is not aware of any previous cases and believes Shila’s pacemaker may be among the first for her species.

Background

In early June, animal keepers observed concerning behavior from Shila including decreased activity and appetite, weight loss, and concerning instances of stumbling, weakness, incoordination and falling. These episodes were brief but happened repeatedly over a two-day period. The veterinary team at Woodland Park Zoo conducted a thorough health exam and determined that the wolf’s heart rate was too slow and appeared to have a high-grade atrioventricular (AV) block, meaning the electrical signals from the upper chamber of the heart were not reaching the ventricles and functioning properly, resulting in a heart rate that was too slow and potentially dangerous. The exam also showed that she was free of other potential disease processes and geriatric conditions.

The zoo worked with an external specialist, veterinary cardiologist Dr. Jerry Woodfield, to perform an echocardiogram, which uses ultrasound to evaluate the heart. This exam confirmed that Shila was indeed experiencing an AV block, causing her heart to beat irregularly and too slowly to support her activity level. Veterinarians were confident that this was the cause of Shila’s atypical behavior and proposed a clear, singular solution for treatment.

This heart condition carries the risk of sudden death, and the only corrective option for this diagnosis is an artificial pacemaker, which regulates the beat of the heart and has the unique ability to completely resolve the AV block when it works properly.

“Our gray wolf’s diagnosis was a 3rd degree AV block, which is a life-threatening form of arrhythmia that can *only* be corrected with a pacemaker. This was the optimal situation for this surgical treatment because Shila is free of underlying heart conditions that can cause AV block and worsen the chance of success, and despite her age she is overall quite healthy,” said Dr. Tim Storms, Director of Animal Health at Woodland Park Zoo and the lead veterinarian in this process. “As a veterinarian it is unique to be faced with a potentially fatal condition that is specific, promptly identified, and correctible with an intervention that is functionally curative. I’m optimistic that this treatment will return her to normal activity and extend the quality and length of her life.”



Procedure

For the pacemaker procedure, Woodland Park Zoo partnered with Dr. Brian Maran and the team at Olympic Veterinary Cardiology, who specialize in state-of-the-art animal heart care. The gray wolf was transported to their Everett, Wash., veterinary cardiology clinic for the minimally-invasive procedure.

In order to implant the pacemaker, Dr. Maran made a small incision and placed the device in the neck area. Using high-tech medical equipment and real-time video x-rays, called fluoroscopic guidance, the pacemaker lead was passed through the right jugular vein and precisely positioned within the heart. The lead was then secured in position and the pacemaker was activated and programmed to regulate the rhythm and beating of the heart.

“Working with Shila, we used the newest, most modern and cutting-edge technology. In many ways, her case is special and unique because there isn’t data specific to wolves and pacemakers. As a cardiologist, it is incredibly rare to work on a patient like this and it was an honor to be part of it,” said Dr. Maran. “Despite the uncommon nature of this case, we felt confident moving forward with this procedure because the treatment itself isn’t unique. Pacemakers are very common in both humans and dogs, and we have learned so much from the data and extensive experience in those cases. I’m pleased to say that patients generally maintain an excellent quality of life with largely normal life expectancy.”

Recovery

Following her pacemaker implantation, Shila was returned to Woodland Park Zoo and will spend approximately two to three weeks in off-view, behind-the-scenes areas where she can rest, continue to heal, and receive medication, observation and care. She has shown positive signs of recuperation in the first 24-hours following her procedure, and she is expected to make a strong recovery and be back in her publicly-visible habitat by mid-July. As some patches of fur had to be shaved for the procedure, Shila will have some visible bald patches on her neck, legs and chest until the fur regrows.

“Shila’s personality is shy and a bit reserved, but she’s also curious about her environment, her keepers and guests. She loves to find enrichment scents and treats that we hide for her, sometimes letting out an excited little howl while she’s waiting for us to put out her enrichment as if to tell us to hurry--she can’t wait!” said Animal Keeper Karen McRea. “Taking care of Shila requires a lot of patience and trust-building because of her shy personality, but building and sharing a trust relationship with her is the most rewarding part of my job as one of her keepers!”

Shila was born in April 2010 at New York State Zoo at Thompson Park and moved to Woodland Park Zoo in October of that year with three littermates, who have all since passed away. Gray wolves are endangered species in regions of the United States, including in Washington state. In the wild, gray wolves live to be about 10 years old. In human care, the life expectancy extends to between 15 and 18 years old. While Shila is considered a geriatric gray wolf at 14 years old, she has good indicators of wellbeing, and this pacemaker supports her overall health.

“This has been a defining moment for Shila and her species. Not only does this pacemaker improve *her* life, it also contributes to a greater scientific and medical understanding of treatment options available for gray wolves in ways that we haven’t

seen before,” said Dr. Storms. “I’m grateful to work alongside so many dedicated, talented experts like our zoo team and Drs. Woodfield and Maran to provide her with this high-level, advanced medical care.”

Woodland Park Zoo is a non-profit organization, and exceptional animal care and veterinary treatment is made possible thanks to our members, ticket-buyers and visitors, public funding, and generous philanthropic contributions from our community, including Dr. Woodfield of Northwest Cardiology Consultants and Dr. Maran and the team at Olympic Veterinary Cardiology, who donated their services. To join in supporting ongoing, extraordinary care for Shila and all of the animals at Woodland Park Zoo, please visit: www.zoo.org/forestsforall

To learn more about Olympic Veterinary Cardiology, visit <https://www.olympicvetcardio.com/>

###